

# New distributional records for some Canadian Neuropterida (Insecta: Neuroptera, Megaloptera)

M. MEINANDER<sup>1,2</sup>, J. KLIMASZEWSKI<sup>3</sup> and G.G.E. SCUDDER<sup>4,5</sup>

## ABSTRACT

The coniopterygids *Conwentzia pineticola* Enderlein, *Helicoconis californica* Meinander, *Semidalis angusta* (Banks) and *S. pseudouncinata* Meinander, and the myrmeleontid *Dendroleon speciosus* Banks are reported as new to Canada. *Semidalis pseudouncinata* is a new introduction for North America. Additional distribution records are given for six British Columbian neuropterid species, four of which are new provincial records.

## INTRODUCTION

Over the past few years, distributional records have been assembled for the neuropterid insects in British Columbia, as part of an assessment of the overall species richness of the province (Warman & Scudder 2007; Austin *et al.* 2008; Austin and Eriksson 2009). Some of these records constitute species new to Canada and/or British Columbia, while others constitute significant new provincial records.

The following account documents these records. Abbreviations for museums in the text are as follows:

CNC: Canadian National Collection of Insects, Agriculture and Agri-Food Canada, Ottawa, ON.

PFC: Pacific Forestry Centre, Canadian

Forest Service, Natural Resources Canada, Victoria, BC.

RBCM: Royal British Columbia Museum, Victoria, BC.

UBC: Spencer Entomological Collection, Beaty Biodiversity Museum, University of British Columbia, Vancouver, BC.

All specimens, unless otherwise stated, were identified by the authors: the Coniopterygidae by Meinander, the Hemerobiidae by Klimaszewski, and the Myrmeleontidae by Scudder. Specimen data cited are as on the specimen data labels, except that dates have been standardized: any elaboration of data labels is in square parenthesis, including the scientific name of host plants.

## NEW RECORDS

### Order NEUROPTERA

#### Family CONIOPTERYGIDAE

#### *Coniopteryx canadensis* Meinander

Heretofore known from Canada: Saskatchewan, USA: Wisconsin (Meinander 1972), and Alaska (Meinander 1990). It was keyed by Meinander (1972).

First BC Record. BC: 1♂, Osoyoos, Mt. Kobau, mi 3 [km 4.8], Mt. Kobau Obs[e]rv[at]ory R[oa]d, 990 m., 31.v-3.vi.1991 (D.C.A. Blades, C.W. Maier) [RBCM ENT 992-010045].

#### *Conwentzia californica* Meinander

Recorded from most of the western

<sup>1</sup> Zoological Museum, Finnish Museum of Natural History, POB 17, FIN-00014, University of Helsinki, Finland

<sup>2</sup> Deceased

<sup>3</sup> Natural Resources Canada, Canadian Forest Service, Laurentian Forestry Centre, 1055 rue du P.E.P.S., Case postale 10380, Stn. Sainte-Foy, Québec, Canada G1V 4C7

<sup>4</sup> Department of Zoology, University of British Columbia, 6270 University Boulevard, Vancouver, BC, Canada V6T 1Z4

<sup>5</sup> Author to whom correspondence should be sent. E-mail; scudder@zoology.ubc.ca

United States (Meinander 1972; Penny *et al.* 1997). The species was keyed by Meinander (1972).

Previously reported Canadian Records: BC, Spahats Creek Prov. Pk., on Hwy. 5, north of Clearwater (Meinander 1990).

New BC Records. BC: 1 specimen, Saanichton, *Thuja plicata*, 5.vi.1990 (FIDS 1990 90-1220-01) [PFC]; 1♂6♀, Vancouver, on box [(*Buxus* sp.)], 9.vii.1965 (G.G.E. Scudder) [UBC]; 1 specimen, Victoria, *S[equoiadendron] gigantium*, 11.ii.1994 (R. Duncan) [PFC].

*Conwentzia pineticola* Enderlein

This Palaearctic species is widely distributed in the United States, and in Canada has been reported from Manitoba, Newfoundland, Nova Scotia, and Ontario (Meinander 1972; Penny *et al.* 1997). The species was keyed in Meinander (1972).

First BC Records. BC: 1 specimen, Duncan, Cobble Hill, S[eed] O[rchard], Se [=Englemann spruce (*Picea engelmannii*)], beating, 30.vi.1994 (M. Hall) [PFC]; 2 specimens, Saanichton, Nootka S[eed] O[rchard], ex. Sx [=hybrid spruce], 14.ix.1992 (M. Hall) [PFC]; 1♂, Salmon Arm, 29.iv.1931 (Hugh B. Leech) [UBC]; 1♂, Victoria, beating branches of *Pinus sylvestris* with predator of *Pineus* sp., 17.iv.1993 (CFS 93-0029-05) [PFC]; 1 specimen, Victoria, Lost Lake S[eed] O[rchard], 10.ii.1993 em[erged] 22-24.ii.1993 (R.G. Bennett) [PFC].

*Helicoconis californica* Meinander

Described from California by Meinander (1972), this species was previously known only from that state (Penny *et al.* 1997); it is newly reported here from Alberta, British Columbia and Yukon. The species was keyed in Meinander (1972).

First Canadian Records. AB: 1♀, Jasper, on *Pinus contorta latifolia*, 17.vi.1942 (E. McDonald) [UBC]; BC: 2♂, Aspen Grove, 14.vi.1933 (K. Graham) [UBC]; 1♀, Chase Creek, Chase, on Englemann spruce, 2.vii.1942 (F.B. Beatty) [UBC]; YT: 1♂, Kluane N.P., Sheep Mt., 4.vi.1979 (G.G.E. Scudder) [UBC].

*Semidalis angusta* (Banks)

Described from California and Arizona

by Banks (1906), this species has subsequently been reported from Arkansas, Montana, and Texas (Meinander 1972; Penny *et al.* 1997), as well as Mexico (Meinander 1990) and Nicaragua (Meinander 1995). It was keyed in Meinander (1972).

First Canadian Record. BC: 1♂, Quesnel, 5.vi.1947 (G.J. Spencer) [UBC].

*Semidalis pseudouncinata* Meinander

This Circum-Mediterranean species, described and keyed by Meinander (1972), has been recorded from Andorra, Croatia [as Yugoslavia], France, Germany, Italy, Morocco, Portugal, Spain, Switzerland, Tunisia, and the United Kingdom by Aspöck *et al.* (2001), and from Slovenia by Devetak (2002). The record from British Columbia noted below constitutes a new alien species in North America.

First North American and Canadian Record. BC: 2♂1♀, Duncan, ex. *Chamaecyparis nootkatensis*, 5.iv.1988 (CFS 88-10-02) [PFC].

Family HEMEROBIIDAE

*Micromus variegatus* (Fabricius)

A widespread Palaearctic species, until recently known in North America only from British Columbia (Klimaszewski and Kevan 1988, 1990), with records reported from Galiano Island. However, it is also newly reported from Quebec (Klimaszewski *et al.* 2009). Keyed by Klimaszewski and Kevan (1988), this species is now known in British Columbia from elsewhere in the Georgia Depression eco-province, as well as the Southern Interior.

New BC Records. BC: 2 specimens, Aldergrove, 14.v.1977 (G.G.E. Scudder) [UBC]; 2 specimens, Penticton, at light in S.E. Cannings home garden, adjacent to grassland, 9.vi.1995 (R.A. Cannings) [RBCM]; 1 specimen, Vancouver, 19.vii.1977 (J.A. Van Reenen) [UBC]; 1 specimen, Vancouver, 16.viii.1981 (G.G.E. Scudder) [UBC]; 1 specimen, Vancouver, UBC Campus, 2.ix.1997 (G.G.E. Scudder) [UBC]; 1♀ (probably this species), Victoria, Rocky Point, GC Site 1, Malaise, 11.vii.1994 (N.N. Winchester) [RBCM].

*Psectra diptera* (Burmeister)

A widespread Palaearctic species that

has been previously reported in Canada only from Newfoundland (Kevan and Klimaszewski 1986) and Ontario (Carpenter 1940), although it is known from many eastern states in the USA (Penny *et al.* 1997). The species was keyed by Kevan and Klimaszewski (1986).

First BC Record: BC: 1 specimen, White Lake, Okanagan Falls, Malaise, 1.vii.1990 (H. Nadel & R. Cannings). [RBCM ENT 991-829].

*Symphorobius barberi* (Banks)

Originally described from Arizona by Banks (1903), this species is widely distributed in the New World from approximately 43°N south to Peru, and on several remote Pacific island groups: Galápagos Islands, Revillagigedo Islands and Hawaiian Islands (Oswald 1988), and has been introduced into Bermuda (Bennett and Hughes 1959). In Canada it was recorded from Ontario by Klimaszewski and Kevan (1992), who also provide a key for identification.

New BC Record. BC: 1♂, Campbell River, Mohun Lake, 25.v.1988 (G. Hutchings) [RBCM ENT 991-11083].

*Wesmaelius yukonensis* Klimaszewski and Kevan

This species was described from the Yukon (Klimaszewski and Kevan 1987b), and was previously known only from that territory (Penny *et al.* 1997). The species was keyed by Klimaszewski and Kevan (1987a).

New BC Record. BC: 1♂, Riske Creek, CIFAC Base, light trap, 4.viii.1978 (R.A. Cannings). [RBCM ENT 991-15995].

Family MYRMELEONTIDAE

*Dendroleon speciosus* Banks

Originally described from Colorado by Banks (1905), this species has since been

recorded from Arizona, California, Colorado, Idaho, Nevada, New Mexico, and Oregon (Banks 1927; Penny *et al.* 1997; Stange 2008), as well as Mexico (Oswald *et al.* 2002). The genus was keyed by Banks (1927) and species keyed by Stange (2008).

First Canadian Records: BC: 1 specimen, Duncan, 30.vii.1922 [CNC]; 1 specimen, Kamloops, 13.vii.1941 (G.J. Spencer) [UBC]; 1 specimen, Kaslo (J.W. Cockle) [CNC]; 1 specimen, Lac La Hache, 19.viii.1933 (W. Downes) [UBC]; 1 specimen, Lillooet [RBCM]; 1 specimen, Lillooet, viii-ix.1927 (A. Phair) [CNC]; 1 specimen, Lillooet, Seton L., 4.vii.1926 (J. McDunnough) [CNC]; 1 specimen, *id.*, 7.vii.1926 [CNC]; 1 specimen, Oliver, UBC Geology Camp, at light, 19.vii.1989 (S. Cannings) [UBC]; 1 specimen, Osoyoos, Haynes Ecol. Res., 'The Throne', pitfall rock/*Selaginella*, 10.vii-14.viii.1986 (S. Cannings) [UBC]; 1 specimen, Seton L., 22.vii.1933 (J. McDunnough) [CNC]; 1 specimen, *id.*, 23.vii.1933; 1 specimen, *id.*, 24.vii.1933; 1 specimen, *id.*, 11.viii.1933; 1 specimen, *id.*, 12.viii.1933 [CNC].

Order MEGALOPTERA

*Sialis joppa* Ross

Originally described from North Carolina by Ross (1937), this species is widely distributed in the eastern United States (Whiting 1991). Keyed by Ross (1937), *S. joppa* was recorded from Ontario by Stange (1990).

New BC Records. BC: 1♂, Cowichan Lake, 22.vi.1937 (Idyall) [UBC]; 1♂, Vernon, 14.v.1948 (D. Evans) [UBC].

Identified originally by Tarter and Watkins in 1979, and confirmed by M.F. Whiting in 2004.

ACKNOWLEDGEMENTS

The research for this paper was supported by grants to G.G.E. Scudder from the Natural Sciences and Engineering Research Council of Canada. Launi Lucas maintained the georeferenced distributional database on which this paper is based, and assisted in the preparation of the manu-

script. M.F. Whiting (Brigham Young University, Provo, Utah) kindly confirmed the identity of *Sialis joppa*. J.D. Oswald (Texas A.&M. University) in an external review provided many helpful comments that greatly improved this paper. R.A. Cannings (RBCM), R.G. Footitt (CNC), L. Humble

(PFC), and Karen Needham (UBC) will- specimens in their respective collections.  
ingly loaned or permitted examination of

## REFERENCES

- Aspöck, H., H. Hölzelrand, and U. Aspöck. 2001. Kommentierter Katalog der Neuropterida (Insecta: Raphidioptera, Megaloptera, Neuroptera) der Westpaläarktis. *Denisia* 2:1-606.
- Austin, M.A., D.A. Buffett, D.J. Nicholson, G.G.E. Scudder and V. Stevens (eds.). 2008. Taking Nature's Pulse: The Status of Biodiversity in British Columbia. Biodiversity BC, Victoria, BC. 268 pp.
- Austin, M.A. and A. Eriksson. 2009. The Biodiversity Atlas of British Columbia. Biodiversity BC, Victoria, BC. 135 pp.
- Banks, N. 1903. Neuropteroid insects from Arizona. *Proceedings of the Entomological Society of Washington* 5:237-245.
- Banks, N. 1905. Descriptions of new Nearctic neuropteroid insects. *Transactions of the American Entomological Society* 32:1-20.
- Banks, N. 1906. A revision of the Nearctic Coniopterygidae. *Proceedings of the Entomological Society of Washington* 8:77-86.
- Banks, N. 1927. Revision of the Nearctic Myrmeleontidae. *Bulletin of the Museum of Comparative Zoology, Harvard University* 68:1-84.
- Bennett, F.D. and I.W. Hughes. 1959. Biological Control of Insect Pests in Bermuda. *Bulletin of Entomological Research*. 50:423-436.
- Carpenter, F.M. 1940. A revision of the nearctic Hemerobiidae, Berothidae, Sisyridae, Polystoechotidae and Dilaridae (Neuroptera). *Proceedings of the American Academy of Arts and Sciences* 74:193-280.
- Devetak, D. 2002. Neuroptera in oak forests in the submediterranean district of Slovenia. Pp. 67-73 *In* G. Sziráki (ed.) *Neuropterology 2000*. Proceedings of the Seventh International Symposium on Neuropterology (6-9 August 2000 Budapest, Hungary). *Acta Zoologica Academiae Scientiarum Hungaricae* 48 (Suppl. 2).
- Kevan, D.K. McE. and J. Klimaszewski. 1986. Notes on the Hemerobiidae or brown lacewing flies (Neuroptera) of Canada and Alaska. *Neuroptera International* 4:7-22.
- Klimaszewski, J. and D.K. McE. Kevan. 1987a. The brown lacewing flies of Canada and Alaska (Neuroptera: Hemerobiidae). Part II. The genus *Wesmaelius* Krüger. *Neuroptera International* 4:153-204.
- Klimaszewski, J. and D.K. McE. Kevan. 1987b. The brown lacewing flies of Canada and Alaska (Neuroptera: Hemerobiidae). Part IIb. The genus *Wesmaelius* Krüger. *Neuroptera International* 4:245-274.
- Klimaszewski, J. and D.K. McE. Kevan. 1988. The brown lacewing flies of Canada and Alaska (Neuroptera: Hemerobiidae). Part III. The genus *Micromus* Rambur. *Giornale Italiano di Entomologia* 19:31-76.
- Klimaszewski, J. and D.K. McE. Kevan. 1990. The genus *Micromus* Rambur in North America, with special reference to Canada and Alaska – a synopsis (Insecta: Neuroptera: Hemerobiidae). Pp. 63-66 *In* M.W. Mansell and H. Aspöck (eds.) *Advances in Neuropterology*. Proceedings of the Third International Symposium on Neuropterology. South African Department of Agricultural Development, Pretoria.
- Klimaszewski, J. and D.K. McE. Kevan. 1992. Review of Canadian and Alaskan brown lacewing flies (Neuroptera: Hemerobiidae) with a key to the genera. Part IV: The genera *Megalomus* Rambur, *Borionymia* Banks, *Psectra* Hagen and *Symphorobius* Banks, *Annals of the Transvaal Museum* 35:435-457.
- Klimaszewski, J., L. LeSage and K. Savard. 2009. First record of adventive species *Micromus variegatus* (Fabricius) from eastern Canada (Neuroptera, Hemerobiidae). *ZooKeys* 27: 1-6.
- Meinander, M. 1972. A revision of the family Coniopterygidae (Planipennia). *Acta Zoologica Fennica* 136:1-357.
- Meinander, M. 1990. The Coniopterygidae (Neuroptera, Planipennia). A check-list of the species of the world, descriptions of new species and other new data. *Acta Zoologica Fennica* 189:1-95.
- Meinander, M. 1995. Coniopterygidae (Neuroptera, Planipennia) from Costa Rica and Nicaragua. *Brenesia* 43/44:61-70.
- Oswald, J. D. 1988. A revision of the genus *Symphorobius* Banks (Neuroptera: Hemerobiidae) of America north of Mexico with a synonymical list of the world species. *Journal of the New York Entomological Society* 96:390-451.
- Oswald, J.D., A. Contreras-Ramos and N.D. Penny. 2002. Neuroptera (Neuropterida). Pp. 559-581 *In* J.L. Bousquets and J.J. Morrone (eds.) *Biodiversidad, Taxonomía y Biogeografía de Artrópodos de México: hacia una síntesis de su conocimiento*. Vol. 3. Universidad Nacional Autónoma de México, Distrito Federal, Mexico.
- Penny, N.D., P.A. Adams and L.A. Stange. 1997. Species catalog of the Neuroptera, Megaloptera, and

- Raphidioptera of America north of Mexico. Proceedings of the California Academy of Sciences 50:39-114.
- Ross, H.H. 1937. Studies on Nearctic aquatic insects. 1. Nearctic alderflies of the genus *Sialis* (Megaloptera, Sialidae). Bulletin of the Illinois Natural History Survey 21:57-78.
- Stange, L. 1990. The alderflies of Florida (Megaloptera: Sialidae). Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Entomology Circular 329:2 pp.
- Stange, L.A. 2008. A new species of the genus *Dendroleon* Brauer from Mexico (Neuroptera: Myrmeleontidae). Insecta Mundi 2008 (54):1-9.
- Warman, L. and G.G.E. Scudder. 2007. Species richness and summed irreplaceability in B.C. Biodiversity BC, Victoria, BC. (Available at: [www.biodiversitybc.org](http://www.biodiversitybc.org)).
- Whiting, M.F. 1991. A distributional study of *Sialis* (Megaloptera: Sialidae) in North America. Entomological News 102:50-56.